

## A NEW FLORA OF GREECE.

*Conspectus Floræ Graecæ.* Auctore E. de Halácsy. 3 vols. Vol. i., pp. 825; vol. ii., pp. 612; vol. iii., pp. 520. (Leipzig: W. Engelmann, 1900-1904.)

SINCE the publication of Sibthorp and Smith's great work, "*Prodromus Floræ Graecæ*," more than a century ago, a large number of individual workers have published floras of certain parts of Greece, and have described a very considerable number of new species. But no work dealing with the Grecian flora as a whole has—since Sibthorp and Smith—been attempted until now. The author of the present work is to be congratulated upon the success he has achieved. His book is most useful to every systematist who has to deal with European plants. He himself had travelled and collected in Greece, and had written on the botany of Greece. To the results of his own observations he has utilised the data furnished by previous authors, whose names and works are duly tabulated at the end of the third volume. The area treated in the "*Conspectus*" is Greece (as politically understood), as well as Epirus and Crete. The three volumes contain 825, 612, and 520 pages respectively. The species are accurately described, except in the case of the more well-known plants, of which bibliographical references and synonyms, as well as habitats, only are given. The larger genera have a key at the commencement of each to facilitate the "running down" of the species.

Practically the sequence of the genera is that of Bentham and Hooker's "*Genera Plantarum*," although some of the suborders of those botanists are given independent rank. For instance, *Fumariaceæ* is separated from *Papaveraceæ*, *Oxalidaceæ* from *Geraniaceæ*, *Rosaceæ* (as understood by Bentham and Hooker) is split up into *Amygdalaceæ*, *Rosaceæ*, and *Pomaceæ*. *Silenaceæ* (*Caryophyllaceæ* of most systematists) has *Alsiniaceæ* separated from it.

It may be of interest to note the relative space occupied by some of the larger natural orders. *Compositæ* heads the list with 245 pages, *Papilionaceæ* comes next with 125, *Gramineæ* and *Labiataæ* have 120 each, *Umbelliferæ* 88, and *Scrophulariaceæ* 74. The largest genera in point of number of species are as follow. To show at a glance the relative proportions of the Greek to the general European flora as given in Nyman's "*Conspectus Floræ Europææ*," the number given by Halácsy is quoted first, and then the total number for the whole of Europe from Nyman. Of *Centaurea*, Greece boasts 71 species, the whole of Europe 171; *Trifolium* 61 species against 108, *Euphorbia* 44 against 107, *Campanula* 43 against 94; *Allium* has more than half the total number of species possessed by the whole of Europe, 41 against 78; in *Verbascum* Greece claims a still larger proportion, 39 species against 54. In *Carex* Greece has 36 species, the European flora altogether 163. *Vicia* has 35 species; Nyman enumerates 61 for Europe. *Astragalus* has 33 Greek species against 120 for the whole of Europe, and *Hieracium* has only 20 species against 185.

It is worthy of mention that the origin of the

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horse-chestnut is here definitely settled. In most books Asia is given as the native country of *Æsculus hippocastanum*; in others it is stated with equal certainty that its native country is uncertain or unknown. Sibthorp records it as occurring in a wild state near Pindus. Nyman, in a note in his "*Conspectus Floræ Europææ*," says, "*Indicatur a Sibthorpio in Pindo, monte illo Graec. bor. sed post eum a nullo alio ibi inventa est.*" Halácsy, however, quotes Haussknecht as having found it truly wild in this and other localities (see *Mitth. thür. bot. Ver.* 1886, p. 71). It was, however, Heldreich (in *Sitzungsb. bot. Ver. Brandenb.*, 1879, p. 139, and 1882, p. 20) who first brought forward sufficient evidence to prove that the real home of the horse-chestnut was in the mountains of Northern Greece. N.

## SUBTERRANEAN GEOGRAPHY.

*Höhlenkunde, mit Berücksichtigung der Karstphänomene.* By Dr. W. von Knebel. Pp. xvi+222. (Brunswick: Vieweg und Sohn, 1906.) Price 5.50 marks.

THIS book is one of the handy monographs in the collection styled "*Die Wissenschaft*," which corresponds well in range with the English "*International Scientific Series*." It may be described as a clear introduction to the study of caves; but it is not so inspiring as the subject deserves. We cannot think, for instance, that it would enable anyone to realise the attraction that the hidden depths have had for certain specialists. There is a tendency in the book to classify phenomena, which may be of service to those who fully grasp their meaning; and perhaps we expect too much from an author who is so eminently exact. Somehow we do not quite see before us the great *gouffres* leading vertically down to unknown waterways; nor, on the surface, the real desolation of the Karstland, the white dust of waterless days, the fantastic rocks standing up in moonlight like ghosts upon the slabs of enormous tombs, the sudden edge of the ravine, and the clear green river sunk half-a-mile below. Well, if we are to study "*Höhlenkunde*," the emotions are for other moments. Yet what an emotional subject it all is!

Dr. von Knebel's account (p. 57) of the subterranean connection between the Danube at Immeningen and a tributary of the Rhine in the Hegau leaves, let us admit, nothing to be desired; and there are plenty of local touches here. Of equal interest is the description (p. 107) of the flow of sea-water into the limestone near Argostoli in Cephalonia, whereby two mills are kept going in the stream. A diagram shows us how this may be accounted for by the outflow of lighter brackish water into the sea at another point, this water being the result of the mingling of a fresh-water spring with the marine flow underground. We learn also how a fresh-water spring emerging under the sea may draw in sea-water from some point above it, through a cavity partly filled with air.

Among many useful discussions, we note (p. 26) that dolomite is stated to be equally soluble with calcite

in water, and that hence dolomite-masses are capable of giving rise to typical karst-phenomena. It is observed (p. 195) that the air of caves is a remarkable conductor of electricity. The relation of typical karst-surfaces to the removal of forests is pointed out, and French areas, cleared after the Revolution, are cited as examples. The French *causses*, by-the bye, deserve rather longer mention, considering how accessible they now are from Millau, and how finely they illustrate the author's thesis. But we welcome the use made of the "dolinas" and "poljes," names that recall the fascination of the Slavonic east. The author's classificatory instinct introduces us also to marine erosion and to Fingal's Cave; to a glimpse of the fauna of caves; and to caves as the haunt of early man. But it is the treatment of the karst-phenomena that will probably give this book a place among works of reference, although precise references to original papers are rare in it, and although it has, strange to say, no index.

G. A. J. C.

#### OUR BOOK SHELF.

*The Outlook to Nature.* By L. H. Bailey. Pp. ix+296. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1905.) Price 5s. net.

PROF. BAILEY is well known as one of the most fertile and inspiring of teachers of science as applied to agriculture and particularly to horticulture, who has built up a great school at Cornell and has also been the source of a wave of teaching from nature among the schools of the United States.

In all Prof. Bailey's work may be seen the qualities of the enthusiast, who is moved, and gets his power to move his followers, by considerations other than those which are the ostensible object of his work. The life of the country-side, farming and gardening, then, are to Prof. Bailey something more than a scientific study or a means of earning a livelihood—they are the great regenerating influences of modern life. He sees civilised existence getting every day more complex, more noisy, more hurried, more exacting; nor in the interests of efficiency does he expect or desire any wholesale return to a more primitive mode of living. But what he does plead for is the "return to nature" in "our personal and private hours" as a "means of restoring the proper balance and proportion in our lives." The book consists of four lectures, delivered in Boston, on such topics as the relation of country to city, the part that nature-teaching should play in school life and the organisation of rural teaching generally, with a final essay on the position of evolutionary conceptions with regard to religion.

We get a vivid and interesting presentment of the opinions and convictions which have made Prof. Bailey a living force in American education; we see that the writer is a passionate lover of nature with a strain of the poet in him, but we do not always find his treatment convincing. The book must be judged as literature, and in literature neither the best of intentions nor the finest of emotions count unless you can express them with something of the freshness and inevitability of a living thing; here we often find the thoughts and arguments of Thoreau, but without his clear-cut and startling intensity of expression. Prof. Bailey is rhetorical, and that means he is some-

times more concerned with the decorative value of his periods than with their absolute truth; for instance, he makes a point that we go to a gallery to see a picture of a sunrise when we might see the sunrise itself! forgetting that it is only the awakened eyes which can see at all. "I never see a sunset like that," objected the critic to Turner; "Don't you wish you could," answered the artist.

However, putting aside the question of these "airs and graces," Prof. Bailey's thesis is sound enough; civilisation is dying and will die of its own self-produced poisons; it is only by the *improbis labor* on the land that the human race seems able to persist.

A. D. H.

*Lecture Notes on Chemistry for Dental Students.* By Dr. H. Carlton Smith. Pp. viii+273. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1906.) Price 10s. 6d. net.

THE connection between dentistry and chemistry is a two-fold one. The practical dental surgeon is a worker in metals; he has to prepare amalgams for stoppings and carry out a multitude of similar operations; hence his need for a knowledge of inorganic chemistry. No less important is the second link; he must know the composition of the teeth, the action upon them of the reagents and drugs he employs; he must understand the action of ferments, whether they are contained within the micro-organisms of the mouth or in the secretions, like saliva, which come in contact with the teeth; hence his need for a knowledge of organic, and especially of physiological, chemistry. Dr. Smith has produced a work which supplies such needs, and one is glad to see he has provided an over-supply; for instance, the sections on physiological chemistry do not deal exclusively with saliva, though naturally this subject is treated with special fulness. This is as it should be; the less specialised and narrow a dentist's education, the more is he likely to benefit those under his care.

In the analyses given of the different parts of the teeth, Dr. Smith states that enamel contains 3 per cent. of organic matter. He does not allude to the work of Tomes, in which it was shown that enamel contains no organic matter at all, and what was formerly given as organic matter (by difference) is really due to water. It is not a very important point, and possibly the author was not aware of Tomes's research on the question.

*A Study of the Sky.* By Prof. Herbert A. Howe. Pp. xii+340. (London: Macmillan and Co., Ltd., 1906.) Price 2s. 6d.

THIS is a cheap edition of a book that appeared originally several years ago. Written in attractive, simple language, Prof. Howe's volume is just the work for those readers who, knowing little or nothing of the oldest of sciences, wish to become personally acquainted with the wonders of the sky.

A very pleasing feature of this book is the way in which the reader is forced to observe and experiment for himself. Chapter i. gives a brief historical sketch of astronomy, and is followed by five chapters dealing with the constellations observable at various seasons, and their apparent diurnal and annual motions. Then come three chapters dealing with astronomers in general and particular, and their tools. A chapter on time and the method of keeping it is followed by five (xi.-xv.) chapters dealing *seriatim* with the members of the solar system. The concluding chapters discuss in a simple but instructive fashion comets and meteors, the fixed stars, and the nebulae.